ABSTRACT

An artificial neural network, ANN, and method of training the ANN for inversion of logging tool signals into well logs of formation parameters is disclosed. Properly selected synthetic models of earth formations are used to train the ANN. The models include Oklahoma and chirp type of formations. In each model parameter contrasts of from 10 to 1 to about 100 to 1 are included. Models including maximum and minimum parameter values spanning the operating range of the selected logging tool are included. Parameter contrasts at interfaces are limited to realistic values found in earth formations. The selected models are used to generate synthetic tool signals, which are then used as inputs to the ANN for training. When the ANN coefficients are properly adjusted to produce an output matching the original models, the ANN can be used for inversion of any real signals from the selected logging tool.